Persistent Urine Leak after Cryoablation of a Renal Tumor in a Patient with an Ileal Conduit

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Thermal ablation is expanding as a technique to treat small renal masses. Damage to the collecting system is uncommon with either radiofrequency ablation or cryoablation. Early evidence suggests that cryoablation is less damaging to the urinary tract, and investigators have advocated the use of aggressive treatment in central tumors in contact with the renal hilum. The authors report a nonhealing urinary fistula after successful cryoablation of an exophytic upper pole renal mass in a patient with an ileal conduit. The presence of an ileal conduit may present an increased risk of urinary fistula after thermal ablation.

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THERMAL ablation techniques are playing a larger role in the treatment of patients with renal tumors who are poor surgical candidates (1–6). Most reports have focused on the use of radiofrequency ablation (RFA) (2,3). Previous reports have demonstrated that RFA adjacent to the collecting system of the kidney can result in unintended thermal injury with stricture or leak of the collecting system (2). Percutaneous cryoablation is developing as a technique to treat these patients, with promising—although limited—reported outcomes (1,4). Some authors have suggested that renal cryoablation may be less damaging to the urinary tract and have advocated its use in the treatment of central tumors in contact with the renal hilum (5). Herein, we report a nonhealing urinary leak after percutaneous cryoablation and the potential association with an ileal conduit.

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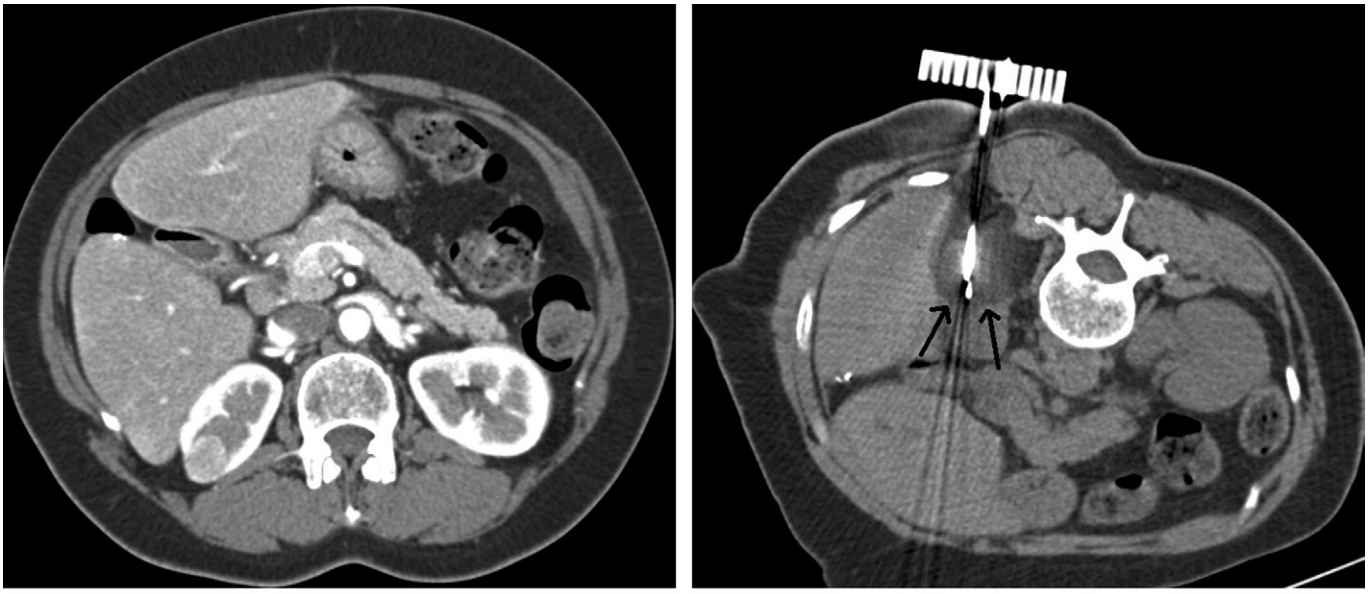
CASE REPORT

This type of study does not require review by our institutional review board. The patient—a 65-year-old African American woman—had a complex medical history, which most notably included the diagnosis of invasive vulvar cancer in 2004. Combination treatment with radiation and chemotherapy resulted in a vesicovaginal fistula, which led to the formation of an ileal conduit in 2005. Her postoperative course was complicated by the development of several intraperitoneal abscesses that necessitated percutaneous catheter drainage and an extended hospital stay. Of note, she was not immunocompromised from other disease processes such as human immunodeficiency virus, congential immunodeficiency, chronic steroid use, or diabetes mellitus.

Follow-up computed tomography (CT) performed in October 2005 demonstrated a solid, partially exophytic renal mass in the upper pole of the right kidney measuring 2.0 × 1.7 × 2.0 cm (6.8 cm^3). Results from biopsy performed in February 2006 were consistent with an oncocytic neoplasm; however, the possibility of renal cell carcinoma could not be excluded in the final report. Follow-up imaging in May 2006 demonstrated an increase in tumor size to 2.4 × 1.8 × 2.1 cm (9.1 cm^3) (**Fig 1a**). On the basis of the interval growth of the mass, the patient desired treatment. She did not want to undergo surgery given the long recovery from her previous procedure and was referred for percutaneous cryoablation.

Percutaneous cryoablation was performed in June 2006. The patient was given moderate sedation with fentanyl (Sublimaze; Abbott, Chicago, Ill) and midazolam (Versed; Abbott) and placed prone in the CT gantry. Prophylactic antibiotics were not administered in keeping with our standard practice. A series of five 21-gauge cryoprobes (Oncura, Plymouth Meeting, Pa) were placed. Two 10-minute freeze sessions using argon gas were performed and separated by a 5-minute thaw with helium gas. After a final thaw, the cryoprobes were removed. The size of the final ice ball was 5.1 × 3.8 × 4.8 cm (93.0 cm^3) (**Fig 1b**). Final imaging did not demonstrate any acute complications. The patient was observed overnight and discharged home in good condition.

Repeat CT was performed 3 months later. The patient arrived complaining of feeling tired and having night sweats. CT demonstrated a retroperitoneal fluid collection contiguous with the upper pole of the right kidney (**Fig 2**). The fluid was frankly purulent when aspirated, and two percutaneous abscess drains were placed.



a. b.

Figure 1. CT scans obtained before **(a)** and after **(b)** cryoablation demonstrate the 2.4 × 1.8 × 2.1-cm renal mass and the final surrounding ice ball (arrow in **b**).

Communication with an upper pole calyx was present (**Fig 3a**). After the patient's symptoms improved, a guide wire was easily manipulated via the calyceal defect to place a 10-F retrograde conduit stent in the interventional radiology suite. This maneuver was performed to facilitate drainage away from the kidney to seal the leak. During antegrade catheterization of the ureter, contrast medium injection demonstrated wide patency of the ureteral anastomosis to the conduit.

The patient improved, and the drain was removed 3 weeks later when drainage tapered off and repeat injection of the drain revealed no connection to the collecting system despite vigorous injection. One week later, her symptoms recurred and repeat imaging demonstrated re-accumulation of the retroperitoneal urinoma. She underwent repeat drainage with catheter removal 2 months later after apparent resolution. The urinoma recollected for a third time 3 weeks later, and a third drain was placed. At this point, after discussion with members of both the urology and interventional radiology departments, the patient agreed to undergo exploration and nephrectomy was performed.

Right radical nephrectomy was uncomplicated, and the patient was discharged on the 6th postoperative day.

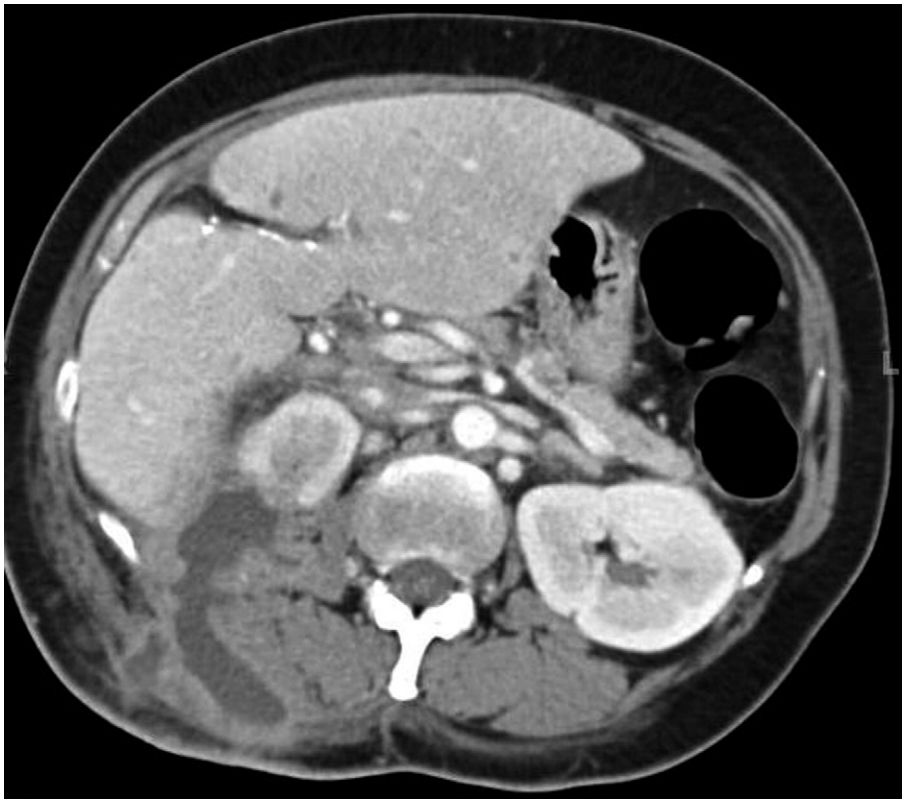


Figure 2. CT scan obtained 3 months after cryoablation shows a retroperitoneal fluid collection in continuity with the upper pole of the right kidney.

Gross examination of the kidney demonstrated a 2-cm defect in the cortex that communicated with the collecting system. Histopathologic examination did not reveal any viable tumor cells in the upper pole of the kidney.